Patent Claims:

1. A method for operating a gas burner, with a sensor supplying an ionization signal being assigned to the gas burner, **characterized in that**

a) at a first point of time, the ionization signal is detected during full-load operation of the gas burner and during partial-load operation of the gas burner, with a first difference being formed between the ionization signal during full-load operation and the ionization signal during partial-load operation,

b) at a second point of time, the ionization signal is detected during full-load operation of the gas burner and during partial-load operation of the gas burner, with a second difference being formed between the ionization signal during full-load operation and the ionization signal during partial-load operation,

c) the first difference and the second difference are compared with each other, wherein, dependent thereon, the state of the gas burner or of the sensor assigned to the gas burner is inferred.

2. The method according to claim 1, **characterized in that** the ionization signal is detected at a plurality of successive points of time during full-load operation and during partial-load operation and for each of these points of time a difference is formed between the ionization signal during full-load operation and the ionization signal during partial-load operation, and that, dependent on a deviation between the differences of directly successive points of time, the

state of the gas burner or of the sensor assigned to the gas burner is inferred.

3. A method according to claim 1 or 2, **characterized in that**, dependent on a deviation between the differences, the aging of the sensor supplying the ionization signal is inferred.

4. A method according to one or plural of claims 1 to 3, **characterized in that**, dependent on a deviation between the differences, namely when a threshold value of the deviation is exceeded, a maintenance indication is activated.

5. A method according to one or plural of claims 1 to 4, **characterized in that**, dependent on a deviation between the differences, namely when a threshold value of the deviation is exceeded, it is switched over to an emergency operation or, in the case of large deviations, the gas burner is switched off.

6. A method according to one or plural of claims 1 to 5, **characterized in that**, dependent on a deviation between the differences, the control of the gas burner is adapted.